

# **The demand for long-term mortgage contracts and the role of collateral**

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- ▶ In the UK and the US - most mortgages have a mortgage term of 25/30 years
- ▶ In the US we have 30 yr fixed rates
- ▶ In many other countries, we have much shorter terms, the UK 2 and 5 year fixed rate periods are common
  
- ▶ Question in this paper: What is the optimal length of time to fix mortgages and what factors does it depend on?

Provides 3 novel contributions:

1. Establishes fixed rate period is decreasing in Loan To Value Ratio (LTV)
2. Proposes mechanism: life cycle of the loan - LTV decreases over the life
  - $\Rightarrow$  Lender charges better credit spread as borrower equity improves
3. Builds a model to study whether mechanism can generate the lack of take up of 5 yr Fixed Rate
  - The model serves as proof of concept: Is (2) the driving factor for fixed rate choice?

- ▶ Rich UK data to study the mortgage market
- ▶ Universe of mtg originations
- ▶ Creates a panel dataset for all new homebuyers in 2013H2-2015H2 cohort
  - track one home buyer over time and to see when they refinance mortgage, what kind of interest rate structure do they move into?

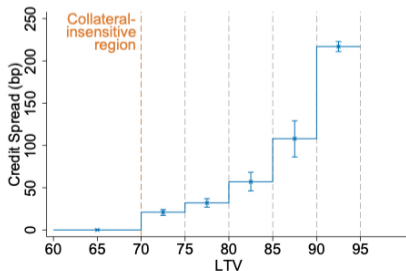
## Empirical Model

$$\begin{aligned} Pr(5yr) &= \beta_1 LTV + \beta_2 LTV \times \mathbb{1}_t[LTV > 80] + \beta_3 LTI + \beta_4 BorrowerAge \\ &+ \beta_5 BorrowerAge^2 + \beta_6 LoanTerm + \beta_7 HPgrowth + \beta_8 HPvol + \beta_9 HPbeta + \epsilon \end{aligned}$$

- ▶ Fixed Effects for: time (year-month), local authority, timexlocal authority, lender, lenderxlocal authority, borrower type, loan deciles, and sales channel (intermediated or direct sale)
- ▶ To price this spread, lenders need to make assumptions about how equity will evolve over time and part of this is what happens with home prices.
- ▶ Rather than bet on home prices, and decreases in borrower LTV, banks charge a spread that is convex in LTV. By borrowing fixed shorter term borrowers pay lower spread
  - The longer the borrower has a fixed rate, the longer the bank has interest rate exposure, since they pay market deposit rates, but have locked in this long term mtg at a low rate.

# Mechanism

- ▶ Borrower wants to lock in interest rate to **insure against interest rate** ↑
- ▶ Bank also worried about interest rate ↑. They will be stuck lending to this borrower long term at a low interest rate while their cost of capital increases.
- ▶ Therefore, banks charge a premium to lend long-term to borrowers
  - Paper estimates credit spread as a function of LTV
  - Premium increasing and convex in LTV
- ▶ **Insight:** High credit spread offsets value of **insuring against interest rate** ↑



## Why LTV and not Credit Score?

1. Most borrowers who refinance after their fixed rate period do so with the same lender. The lender does not rerun a credit check based on borrower characteristics like creditworthiness and income. Lenders simply look at LTV.
2. If the paper's cross section is across borrowers across time and borrowers are not being repriced on their credit worthiness, then it makes sense to shut down that channel and just study the LTV channel.
3. It seems if the LTV is the main driver of the credit spread it is driven by collateral value if a borrower defaults. Would be good to discuss what fraction of home price lender can recoup if a borrower defaults.
  - Do lenders for example only make 80% of home value in foreclosure?
  - This would explain why we see a kink in mortgage rate at 80% LTV

## Is LTV Important Due to Foreclosure Value?

*“It’s very difficult to gauge, because there’s some neighborhoods that, even if it goes to auction, the bank is going to have a stop-loss price based on the comps in that neighborhood. They are going to say, ‘Okay, we’re willing to take .80 on the dollar, or .70 on the dollar,’ and then there are other neighborhoods that they just flat-out want to get [the house] off their books.”*

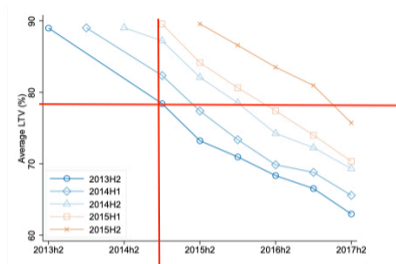
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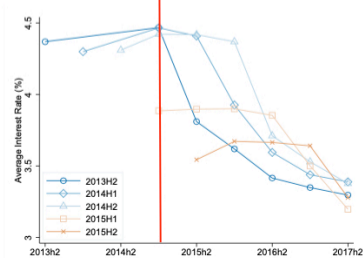


# Is LTV Important Due to Foreclosure Value?

(B) LTV (90%)



(D) MORTGAGE RATE (90% LTV)



## Mortgage interest rate

$$r_t^m = \rho^m + r_t^\tau + f(LTV_t^\tau, \theta^\tau)$$

- ▶ Model tests whether LTV/credit spread channel is driving lack of 5 yr mtg take up
- ▶ Model shuts down credit risk other than variation in LTV
- ▶ Model uses data to estimate  $f(., .)$
- ▶ **Comment:** Uses 2yr at 60% LTV to estimate  $\rho^m$  the mortgage premium
  - Should this use 5yr at 60% LTV - most 60% LTV borrow 5 year.
  - If premium is set too high it will push too high a fraction of borrowers into the 2yr fixed.

- ▶ Clarify no refinance penalties **during fixed rate term** in the introduction
- ▶ Add discussion to the second sentence that 30 yr mtg is common in US, UK, and any other countries. Explain how UK mortgages typically work in terms of remortgaging into another fixed rate period
- ▶ Add regression equation to the paper
- ▶ Some sentences are very long. Would help reader parse content if sentences were shorter and parceled information into several different sentences rather than a single one.
  - A good rule of thumb is a sentence should be no longer than 3 lines.

- ▶ mtg most important asset in the world for most hh but we do not know the optimal fixed rate period and how it varies with loan characteristics
- ▶ this matters for example with BAPCPA and rolling out more mtgs that functioned like 2 yr fixed rate mtg that then reset to higher rate, they assumed borrowers would refinance (but the timing of refinance can be nailed down by the age of the loan, if you know the fixed rate period)
- ▶ helps us understand what aggregate risk might be in the economy if certain types of borrowers are in short term or long- term contracts when we are thinking about switching into a new interest rate regime like we did with the recent period of interest rate increases